U.S. Environmental Protection Agency

Park Plating Emergency Removal Response

Soil Sampling QA/QC Work Plan

1.0 BACKGROUND

The [suspected] contamination is a result of:

runoff water from fire fighting efforts carrying contaminants to adjacent properties.

The following information is known about the site:

The site is located in the city of Loves Park in the county of Winnebago in the state of Illinois. Residential areas exist within a quarter mile north, west, and south of the site.

It was a metal plating site on 1 acre which had been operating for 40 to 50 years time and is now abandoned since it burned down in 1990.

The types of material(s) handled at this site were:

acids
bases
organics
cyanides
metals

The volume(s) of contaminated materials to be addressed are:

Acid liquids: 800 gallons

Base liquids: 3,400 gallons

Cyanide liquids: 1,300 gallons

Organic liquids: 700 gallons

The contaminants of concern are:

cyanide

metals, including: cadmium, chromium, nickel, and zinc

The basis of this information may be found in:

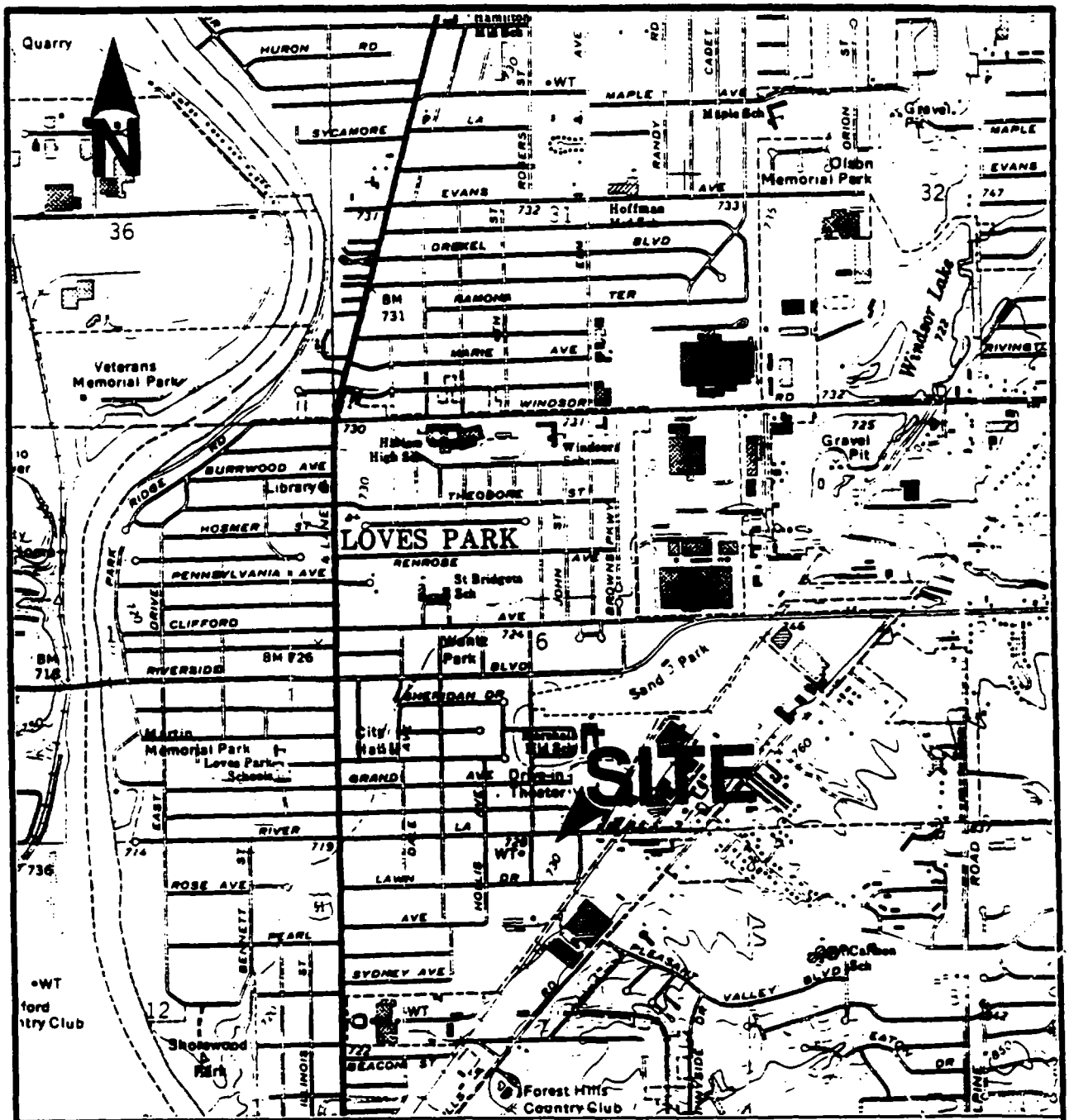
Initial sampling after the fire in late 1991 showed low levels of cyanide and metals in soils on D Machine property west of Park Plating.

2.0 DATA USE OBJECTIVES

The objective of this project / sampling event is to determine:

the presence of contamination
the extent of contamination
the magnitude of contamination

Park Plating - Soil Study
Figure 1-1 Site Location Map



QUADRANGLE LOCATION

ecology and environment, inc.
Technical Assistance Team
Region V

TITLE: SITE LOCATION MAP	FIGURE #: 1
SITE: PARK PLATING	TDD#: T05-9112-027
CITY: LOVES PARK STATE: ILLINOIS	SCALE: 1:24,000
SOURCE: USGS QUADRANGLE MAPS	DATE: 12/4/91 REVISED: 6/5/92

For the purpose of:

Determining whether or not soil excavation is needed

The data will be evaluated against:

previous sampling conducted by D Machine's contractor

3.0 QUALITY ASSURANCE OBJECTIVES

As identified in Sections 1.0 and 2.0 the objective of this project/event applies to the following parameters:

Parameters	Matrix	Intended Use Of Data	QA Objective
cyanide	Soil	Extent of Contam.	QA2
flashpoint	Soil	Extent of Contam.	QA2
Metals	Soil	Extent of Contam.	QA2
pH	Soil	Extent of Contam.	QA2
sulfide (tot. + reac)	Soil	Extent of Contam.	QA2
tot. organic halogen	Soil	Extent of Contam.	QA2

4.0 APPROACH AND SAMPLING METHODOLOGIES

4.1 Sampling Equipment

The following equipment will be utilized to obtain environmental samples from the respective media/matrix:

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
cyanide in Soil	Bucket Auger	stainless steel	No

Decontamination Steps

1 Non-phosphate detergent wash
2 Distilled/deionized water rinse

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
flashpoint in Soil	Bucket Auger	stainless steel	No

Decontamination Steps

1 Non-phosphate detergent wash
2 Distilled/deionized water rinse

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
Metals in Soil	Bucket Auger	stainless steel	No

Decontamination Steps

1 Non-phosphate detergent wash
2 Distilled/deionized water rinse

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
pH in Soil	Bucket Auger	stainless steel	No

Decontamination Steps

1 Non-phosphate detergent wash
2 Distilled/deionized water rinse

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
sulfide in Soil	Bucket Auger	stainless steel	No

Decontamination Steps

1 Non-phosphate detergent wash
2 Distilled/deionized water rinse

Parameter/Matrix	Sampling Equipment	Fabrication	Dedicated
tot. organic halogen in Soil	Bucket Auger	stainless steel	No

Decontamination Steps

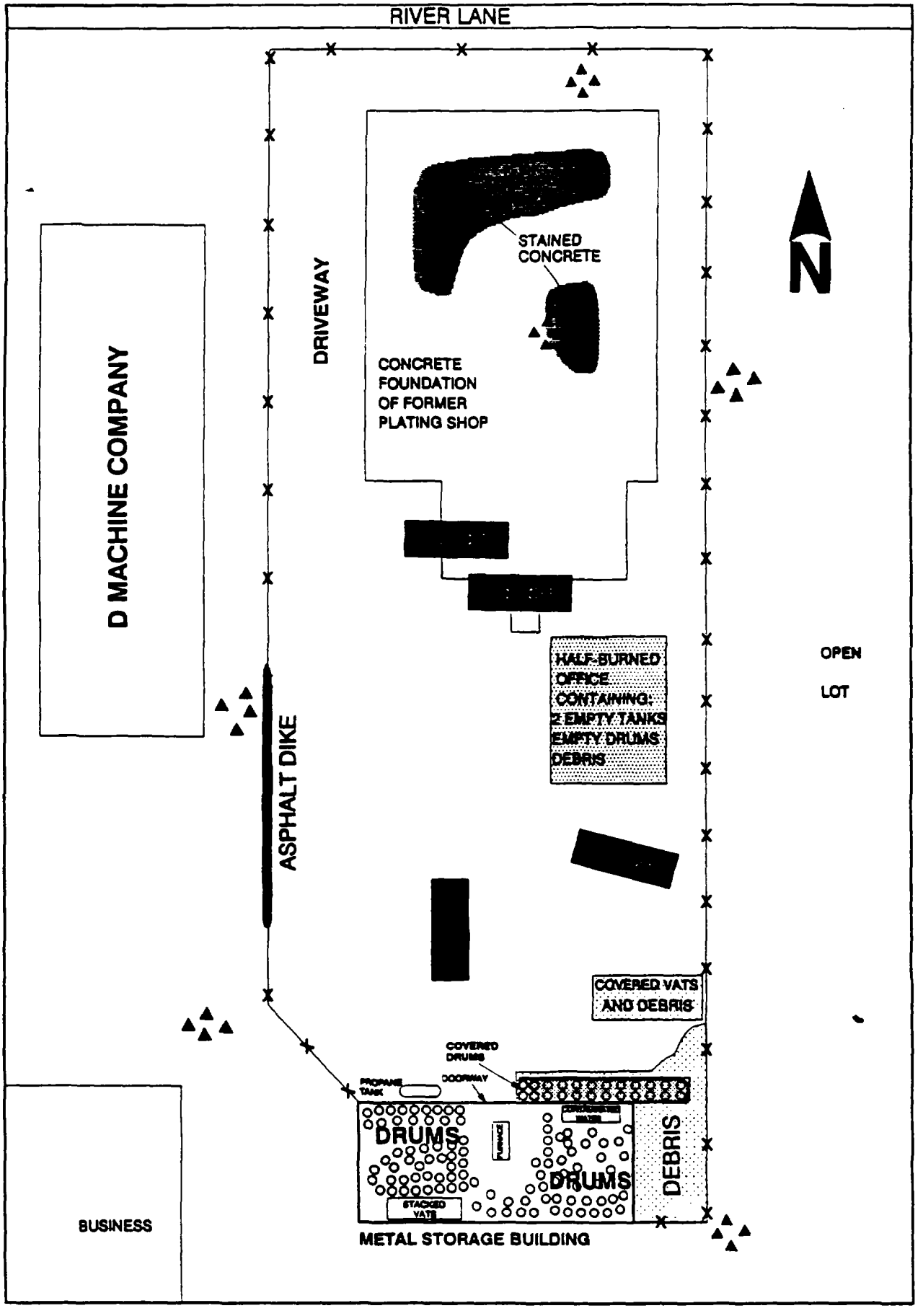
1 Non-phosphate detergent wash
2 Distilled/deionized water rinse

4.2 Sampling Design

The sampling design is depicted on the attached Sample Location Map (Figure 4-1) and is based on the following rationale:

Sample locations were chosen to determine the extent of lateral migration of contaminants from the site. Migration of these contaminants could possibly have been carried by runoff water used to fight the fire as the Park Plating facility burned in late 1990. Sample locations west of Park Plating property constitute low lying areas where rain water often collects and on the east side of D Machine property where a pit was dug to collect runoff water on the night of the fire. Other areas include north, east, and south property boundaries, a hole in the plating shop foundation, and a clean soil blank.

Park Plating - Soil Study
Figure 4-1 Sample Location Map



4.3 Standard Operating Procedures

4.3.1 Sample Documentation

All sample documents will be completed legibly, in ink. Any corrections or revisions will be made by lining through the incorrect entry and by initialling the error.

FIELD LOGBOOK

The field logbook is essentially a descriptive notebook detailing site activities and observations so that an accurate account of field procedures can be reconstructed in the writer's absence. All entries will be dated and signed by the individuals making the entries, and should include (at a minimum) the following:

1. Site name and project number.
2. Name(s) of personnel on-site.
3. Dates and times of all entries (military time preferred).
4. Descriptions of all site activities, including site entry and exit times.
5. Noteworthy events and discussions.
6. Weather conditions.
7. Site observations.
8. Identification and description of samples and locations.
9. Subcontractor information and names of on-site personnel.
10. Date and time of sample collections, along with chain of custody information.
11. Record of photographs.
12. Site sketches.

SAMPLE LABELS

Sample labels will clearly identify the particular sample, and should include the following:

1. Site ERCS D.O. number.
2. Time and date sample was taken.

Optional, but pertinent, information is the sample location.

Sample labels will be securely affixed to the sample container. Tie-on labels can be used if properly secured.

CHAIN OF CUSTODY RECORD

A Chain of Custody record will be maintained from the time the sample is taken to its final deposition. Every transfer of custody must be noted and signed for, and a copy of this record kept by each individual who has signed. When samples (or groups of samples) are not under direct control of the individual responsible for them, they must be stored in a locked container sealed with a Custody Seal.

The Chain of Custody record should include (at minimum) the following:

1. Sample identification number.
2. Sample information.
3. Sample location.
4. Sample date.
5. Name(s) and signature(s) of sampler(s).
6. Signature(s) of any individual(s) with control over samples.

CUSTODY SEALS

Custody Seals demonstrate that a sample container has not been tampered with, or opened.

The individual in possession of the sample(s) will sign and date the seal, affixing it in such a manner that the container cannot be opened without breaking the seal. The name of this individual, along with a description of the sample packaging, will be noted in the field logbook.

4.3.2 Sampling SOPs

Soil Sampling

Collection of soil samples from 0 to 2 feet will be accomplished with bucket augers. Spades, shovels and pick axes will be used if and when necessary. The bucket auger will be emptied directly into clean glass mixing bowls with the aid of wooden tongue depressors if necessary. A composite from four locations within a 6-foot diameter area will be thoroughly mixed in the bowl and placed in a clean, appropriately-labelled glass jar. All bowls and augers will be properly decontaminated between sample locations.

4.3.3 Sample Handling and Shipment

Each of the sample bottles will be sealed and labeled according to the following protocol. Bottle labels will contain all required information including site ERCS Delivery Order No. and sample number, and time and date of collection. Sealed bottles will be placed in large metal or plastic coolers, and padded with vermiculite.

All sample documents will be affixed to the underside of each cooler lid. The lid will be sealed and affixed on at least two sides with custody seals so that any sign of tampering is easily visible.

4.4 Schedule of Activities

Table 1: Proposed Schedule of Work

Activity	Start Date	End Date
Soil sampling	07/31/92	07/31/92

5.0 PROJECT ORGANIZATION AND RESPONSIBILITIES

The EPA On-Scene Coordinator, Thomas Basso, will provide overall direction to Ecology & Environment staff concerning project sampling needs, objectives and schedule.

The Ecology & Environment Task Leader, Tom Kouris (TATL), is the primary point of contact with the EPA On-Scene Coordinator. The Task Leader is responsible for the development and completion of the Sampling QA/QC Plan, project team organization, and supervision of all project tasks, including reporting and deliverables.

The Ecology & Environment Site QC Coordinator, Mary Jane Ripp, is responsible for ensuring field adherence to the Sampling QA/QC Plan and recording any deviations. The Site QC Coordinator is also the primary project team contact with the lab.

The following sampling personnel will work on this project:

Personnel	Responsibility
William Sass	Sample collection/packaging

The following laboratories will be providing the following analyses:

Lab Name / Location	Lab Type	Parameters
TBD		

6.0 QUALITY ASSURANCE REQUIREMENTS

The following requirements apply to the respective QA Objectives and parameters identified in Section 3.0:

The following QA Protocols for QA2 data are applicable to all sample matrices and include:

1. Provide sample documentation in the form of field logbooks, the appropriate field data sheets and chain of custody records. Chain of custody records are optional for field screening locations.

2. All instrument calibration and/or performance check procedures/methods will be summarized and documented in the

field/personal or instrument log notebook.

3. The detection limit will be determined and recorded, along with the data, where appropriate.

4. Document sample holding times; this includes documentation of sample collection and analysis dates.

5. Provide initial and continuing instrument calibration data.

6a. For soil, sediment and water samples, include rinsate blanks, field blanks and trip blanks, as specified in the attached table.

6b. For air samples, include lot blanks, field blanks, collocated samples, trip blanks, breakthrough, and QC positive samples, as specified in the attached table.

7. Performance Evaluation samples are optional, if available.

8. Choose any one or combination of the following three options:

1. Definitive identification - confirm the identification of analytes on 10% of the screened (field or lab) or 100% of the unscreened samples via an EPA-approved method; provide documentation such as gas chromatograms, mass spectra, etc.

2. Quantitation - provide documentation for quantitative results from screening and the EPA-approved verification method (for screened samples) or just the quantitative results (in the case of unscreened samples).

3. Analytical error determination - determine the analytical error by calculating the precision, accuracy, and coefficient of variation on a subset of the screened or all of the unscreened samples using an EPA-approved method.

7.0 DELIVERABLES

The Ecology & Environment Project Manager, William Sass, will maintain contact with the EPA On-Scene Coordinator, Thomas Basso, to keep him informed about the technical and financial progress of this project. This communication will commence with the issuance of the work assignment and project scoping meeting. Activities under this project will be reported in status and trip reports and other deliverables (e.g., analytical reports, final reports) described herein. Activities will also be summarized in appropriate format for inclusion in monthly and annual reports.

The following deliverables will be provided under this project:

William Sass will keep OSC Tom Basso informed of site activities and sample status. He will also keep in contact with the ERCS contractor arranging the analytical lab and receiving data.

The ERCS contractor will arrange the analytical lab. A maximum turnaround time of no longer than 2-weeks will be requested.

8.0 DATA VALIDATION

QA2

Data generated under this QA/QC Sampling Plan will be evaluated by E & E accordingly with appropriate criteria contained in the Removal Program Data Validation Procedures which accompany OSWER Directive #9360.4-1.

The results of 10% of the samples in the analytical data packages should be evaluated for all of the elements listed in Section 6.0 of the QA/QC Sampling Plan. The holding times, blank contamination, and detection capability will be reviewed for all remaining samples.

INORGANIC TARGET ANALYTE LIST (TAL)

Analyte	Detection Limit (ug/L -- water (1))
Aluminum	200
Antimony	60
Arsenic	10
Barium	200
Beryllium	5
Cadmium	5
Calcium	5000
Chromium	10
Cobalt	50
Copper	25
Iron	100
Lead	3
Magnesium	5000
Manganese	15
Mercury	0.2
Nickel	40
Potassium	5000
Selenium	5
Silver	10
Sodium	5000
Thallium	10
Vanadium	50
Zinc	20
Cyanide	10

(1) Sediment detection limit 100x water (ug/kg -- soil/sediment).

Based on the Contract Laboratory Program Statement of Work, ILMO2.1 (9/91)

Table 2 : Field Sampling Summary

Analytical Parameter	Level of Sensivity	Matrix	Container Type Volume, Quantity	Preserv-ative	Holding Times	Subtotal Samples	QC Extras: Rinsate/ Field Blanks	QC Extras: Trip Blanks (VOA's)	QC Extras: PE Samp.	QC Extras: Matrix Spikes	Total Field Samples
Metals	None	Soil	8 oz glass (1)	4°C	6 month	N/A	N/A	N/A	N/A	N/A	
	0.001 mg/kg					8	0/1	N/A	0	0	9
cyanide	None	Soil	8 oz glass (1)	4°C	14 days	N/A	N/A	N/A	N/A	N/A	
	0.001 mg/kg					8	0/1	N/A	0	0	9
sulfide	None	Soil				N/A	N/A	N/A	N/A	N/A	
	0.001 mg/kg					8	0/1	N/A	0	0	9
tot. organic halogen	None	Soil				N/A	N/A	N/A	N/A	N/A	
	1 mg/kg					8	0/1	N/A	0	0	9
flashpoint	None	Soil				N/A	N/A	N/A	N/A	N/A	
	1 degree F					8	0/1	N/A	0	0	9
pH	None	Soil				N/A	N/A	N/A	N/A	N/A	
	0.01 S.U.					8	0/1	N/A	0	0	9

(C) - refers to confirmation samples

Table 3 : QA/QC Analysis and Objectives Summary

Analytical Parameter	Matrix	Analytical Method Ref.	Spikes		QA/QC	
			Matrix	Surrogate	Detection Limits	QA Objective
Metals	Soil	SW-846	0	YES	See Attached	QA2
cyanide	Soil	SW-846	0	YES	See Attached	QA2
sulfide	Soil		0	YES	See Attached	QA2
tot. organic halogen	Soil		0	YES	See Attached	QA2
flashpoint	Soil		0	YES	See Attached	QA2
pH	Soil		0	YES	See Attached	QA2